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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
BOOKER, KELVIN E

ART UNIT	PAPER NUMBER
2121	21

DATE MAILED: 03/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _05 January 2004_.
2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-31_ is/are pending in the application.
   4a) Of the above claim(s) _2,3 and 30_ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _1,4-29 and 31_ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some * c) ☐ None of:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. _____.
    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
       application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: _Detailed Office Action_.

DETAILED ACTION

Response to Amendment

1. In Amendment "D", filed January 5, 2004 (see paper no. 20), **claims 1, 4-29 and 31** are

presented for reconsideration.

Response to Arguments

2. Applicant's arguments filed January 5, 2004 have been fully considered but they are not

persuasive.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4. **Claims 1, 4-29 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Jagielski, "An Application of Neural Networks to Emulation of Aesthetic Judgments" [hereafter

Jagielski] in view of Yasuda et al., "Application of Neural Network to Aesthetic Design of

Bridges" [hereafter Yasuda].

    As per claim 1, Jagielski teaches of a computer-implemented method comprising: (A)

inputting a training set including a plurality of images and a corresponding plurality of aesthetic

scores for the images (see Abstract; and page 336, column 1: inputting images and corresponding aesthetic values); (B) training a classifier to provide aesthetic scores based on the training set (see page 336, columns 1 and 2: training the classifier); and (C) generating an aesthetic score for the image based on the classifier (see page 336, columns 1 and 2: training the classifier and generating a score). Although Jagielski clearly teaches of using back-propagation in order to fine-tune the disclosed neural network for several test cases (see page 336, column 2, paragraph four through page 337, column one, paragraph one; and Tab 2 on page 337), the art fails to explicitly disclose the generation of a recommendation to improve the aesthetic score.

However, Yasuda teaches of generating a recommendation to improve an aesthetic score for the image by evaluating the end results and compiling a recommendation that can be applied to a design to improve the project (see sections 5-6 on pages 540-541, especially section 6 on page 541).

It would have been obvious to one of ordinary skill in the art, at the time of the applicant's invention, to combine Jagielski's method of generating an aesthetic score for input images based on a trained neural network, with Yasuda's method of generating a recommendation based upon results from the network, in order to provide a method for presenting to the user and/or designer, a recommendation as to some of the aesthetic options, which when applied to an image/project, will provide greater aesthetic value. Merging the two methods also provides the user and/or designer the flexibility of either adding or deleting determined options to better refine an image/project.

As per claim 4, Jagielski teaches of generating aesthetic scores (see claim one above), but fails to explicitly disclose generating recommendations by employing a *gradient ascent*.

However, Yasuda teaches of generating a recommendation that comprises the use of a

gradient ascent during the system configuration by the neural network (see section 4.1 on page

537: quantifying the multiple inputs into the neural network in order to facilitate rule generation

for the resultant recommendation).

It would have been obvious to one of ordinary skill in the art, at the time of the

applicant's invention, to combine Jagielski's method of generating aesthetic scores with

Yasuda's method of employing a *gradient ascent* in order to provide a method for quantifying

objective and subjective (e.g., qualitative and quantitative) input values, and generating a

quantitative value in order to provide a numerical basis for the neural network to operate.

As per claim 5, Jagielski teaches of generating aesthetic scores (see claim one above),

but fails to explicitly disclose generating recommendations via local searches.

However, Yasuda teaches of generating a recommendation comprising of performing a

local search (see section 3 on page 535; and tables 1-3 on page 536: searching and employing

aesthetic parameters along with local images).

It would have been obvious to one of ordinary skill in the art, at the time of the

applicant's invention, to combine Jagielski's method of generating aesthetic scores with

Yasuda's method of performing local searches in order to provide a more efficient [via both cost

and resource usage] method of gathering information relative to a project, and forming a basis

for generating the resulting recommendation.

As per claim 6, Jagielski teaches of a method wherein training a classifier comprises

training one of a Bayesian classifier, a Support Vector Machine (SVM) classifier, a neural net

classifier, and a decision tree classifier (see Abstract; and page 336, column 1: employing a neural network for training purposes).

As per claim 7, Jagielski teaches of a method wherein training a classifier comprises utilizing feature selection to correlate at least one image feature of the images with their corresponding aesthetic scores (see page 335, column 1: using aesthetic descriptors and preferences).

As per claim 8, Jagielski teaches of a method wherein utilizing feature selection to correlate at least one image feature comprises utilizing feature selection to correlate at least one image feature selected from the group essentially consisting of: color presence, color distribution, geometrical quantities of segmented image parts, coefficients of image transformations, and higher-level image representations (see page 335, column 1: using aesthetic descriptors and preferences).

As per claim 9, Jagielski teaches of a computer-implemented method comprising: (A) inputting an image (page 336, column 1); and (B) generating an aesthetic score for the image by utilizing a classifier previously trained on a training set including a plurality of images and a corresponding plurality of aesthetic scores for the images (see page 336, columns 1 and 2).

Although Jagielski clearly teaches of using back-propagation in order to fine-tune the disclosed neural network for several test cases (see page 336, column 2, paragraph four through page 337, column one, paragraph one; and Tab 2 on page 337), the reference fails to explicitly disclose the generation of a recommendation to improve the aesthetic score.

However, Yasuda teaches of generating a recommendation to improve an aesthetic score for the image by evaluating the end results and compiling a recommendation that can be applied

to a design to improve the project (see sections 5-6 on pages 540-541, especially section 6 on page 541).

It would have been obvious to one of ordinary skill in the art, at the time of the applicant's invention, to combine Jagielski's method of generating an aesthetic score for input images based on a trained neural network, with Yasuda's method of generating a recommendation based upon results from the network, in order to provide a method for presenting to the user and/or designer, a recommendation as to some of the aesthetic options, which when applied to an image/project, will provide greater aesthetic value, while also presenting to the user and/or designer the flexibility to either add or delete aforementioned options.

As per claim 10, Jagielski teaches of a method wherein generating an aesthetic score comprises generating an aesthetic score based on at least one image feature of the image (see page 335, column 1).

As per claim 11, Jagielski teaches of a method wherein generating an aesthetic score based on at least one image feature of the image comprises generating an aesthetic score based on at least one image feature selected from the group essentially consisting of: color presence, color distribution, geometrical quantities of segmented image parts, coefficients of image transformations, and higher-level image representations (see page 335, column 1).

As per claim 12, Jagielski teaches of a method wherein utilizing a classifier comprises utilizing one of a Bayesian classifier, a Support Vector Machine (SVM) classifier, a neural net classifier, and a decision tree classifier (Abstract; and page 336, column 1).

As per claims 13-18, the same limitations are subjected to in claims 1 and 4-8, therefore the same rejections apply (see claims 1, and 4-8 above).

As per claim 19, the same limitations are subjected to in claim 1, therefore the same rejections apply (see claim 1 above).

As per claims 20-21, the same limitations are subjected to in claims 6-7, respectively, therefore the same rejections apply (see claims 6-7 above).

As per claims 22-23, the same limitations are subjected to in claims 9-10, respectively, therefore the same rejections apply (see claims 9-10 above).

As per claim 24, the same limitations are subjected to in claim 12, therefore the same rejections apply (see claims 12 above).

As per claims 25-27, the same limitations are subjected to in claims 1, 4 and 5, respectively, therefore the same rejections apply (see claims 1, 4 and 5 above).

As per claims 28 and 29, the same limitations are subjected to in claims 16 and 18, respectively, therefore the same rejections apply (see claims 16 and 18 above).

As per claim 30, Jagielski teaches of generating aesthetic scores (see claim one above), but fails to explicitly disclose generating recommendations based on manipulating visual elements in the image.

However, Yasuda teaches of generating recommendations on how to improve the aesthetic score by manipulating visual elements/characteristics in an image (see sections 5-6 on pages 540-541, especially section six on page 541).

It would have been obvious to one of ordinary skill in the art, at the time of the applicant's invention, to combine Jagielski's method of generating an aesthetic score for input

images based on a trained neural network, with Yasuda's method of generating a

recommendation based upon manipulating visual elements in an image, in order to provide a

method for presenting to the user and/or designer, a recommendation as to some of the aesthetic

options, which when applied to a project, will provide greater aesthetic value.

5. In response to applicant's remarks that the references fail to show certain features of

applicant's invention, it is noted that the features upon which applicant relies (i.e., "…

'suggestions as to how the image's score could be improved by manipulating visual elements in

the images' (specifications, page14, lines 9-12)"; and "… 'may suggest that particular colors be

used, or that certain geometrical elements be removed, in order to improve the image's aesthetic

score' (specification, page 14, lines 12-14)") are not recited in the rejected claims. Although the

claims are interpreted in light of the specification, limitations from the specification are not read

into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. In the remarks, Applicants argue in substance that the cited reference fails to discuss *a*

method of generating a recommendation to improve the aesthetic score for an image.

7. In response to the Applicant's argument, the Examiner respectfully disagrees. Jagielski

teaches of using back-propagation in order to fine-tune neural networks for test cases (see claim

one above and previous Office Action; page 336, column 2, paragraph four through page 337,

column one, paragraph one; and Tab 2 on page 337). Regarding generating recommendations to

improve aesthetic scores, Yasuda clearly teaches of evaluating the end results and compiling a

recommendation that can be applied to a design to improve a project (see claim one above and previous Office action; and sections 5-6 on pages 540-541, especially section 6 on page 541).

It would have been obvious to one of ordinary skill in the art, at the time of the applicant's invention, to combine Jagielski's method of generating an aesthetic score for input images based on a trained neural network, with Yasuda's method of generating a recommendation based upon results from the network, in order to provide a method for presenting to the user and/or designer, a recommendation as to some of the aesthetic options, which when applied to an image/project, will provide greater aesthetic value. Merging the two methods also provides the user and/or designer the flexibility of either adding or deleting determined options to better refine an image/project.

Conclusion

8. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

      A. Machado et al., "Computing Aesthetics";

      B. Oh et al., "Image Thresholding by Indicator Kriging"; and

      C. Reich, "A Model of Aesthetic Judgement in Design".

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

10. An inquiry concerning this communication or earlier communications from the examiner

should be directed to Kelvin Booker whose telephone number is (703) 308-4088. The examiner

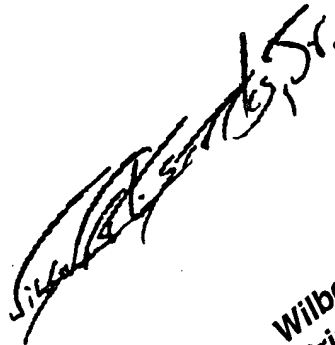can normally be reached on Monday-Friday from 7:00 AM-5:30 PM EST.

   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Anil Khatri, can be reached on (703) 305-0282. The fax number for the organization

where this application or proceeding is assigned is (703) 872-9306.

   An inquiry of a general nature or relating to the status of this application proceeding

should be directed to the receptionist whose telephone number is (703) 305-3900.

K.E.B.

Art Unit 2121

March 15, 2004

Wilbert L. Starks, Jr.
Primary Examiner
Art Unit - 2121